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Theridion zonulatum Thorell 1890, a senior synonym of *Theridion zebrinusum* Zhu 1998

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Abstract — Examination of the type material and description of *Theridion zonulatum* Thorell 1890 shows that this name is a senior synonym of *Theridion zebrinusum* Zhu 1998.

Key words — Araneae, spiders, *Theridion*, nomenclature

Introduction

During a visit to Khao Sok National Park, Thailand (8° 55′N, 98°35′E), on 12 November 2013 one of us [RE] observed a couple of strikingly colored theridiid spiders, with a strong sexual size dimorphism. The specimens, which were found in their web on a leaf in low shrubbery along a rainforest trail, were photographed (Fig. 1), but not collected. Nonetheless, the unique color pattern on the female abdomen, consisting of a series of 7 narrow black stripes on a white background, allowed initial identification as *Theridion zebrinusum*. This was confirmed by examining the epigyne of a second female collected on 22 March the following year at the same location (Fig. 2). *T. zebrinusum* was first described by Zhu (1998:165) based on a single female collected on 11 November 1979 in Menglun, Mangla County, Yunnan, Southern China, close to the border to Myanmar and Laos (21°55′N, 101°15′E [21°25′N, 100°36′ E, according to the original publication]), but is widely distributed in Southeast Asia, with records from Brunei, Singapore, peninsular Malaysia and Thailand (Koh & Ming 2014).

Another specimen was photographed by one of us [GA] in riverine forest in the Mulu National Park, below 250 m a.s.l., Sarawak, Borneo, East Malaysia (4°8′N, 114°55′E; Fig. 3) on 14 February 2008.

The fact that the species is widespread, apparently quite common and visually striking caused the suspicion that it might have been reported earlier from the region. A search of the classical literature describing spiders from Southeast Asia, in particular the works of Tord Tamerlan Teodor Thorell, quickly revealed a strong candidate: *Theridion zonulatum* was first described in 1890 based on a female specimen collected by Beccari at Ajer Mancior [Air Mancur/Aia Mancua] waterfall, West Sumatra (0°29′S, 100° 20′E), in August 1878 (Thorell 1890: 273). We provide a brief examination of the taxonomic situation of the two taxa in the following section.

Taxonomic examination

The name *zonulatum* refers to the finely banded pattern, and the description by Thorell shows a very close match with *T. zebrinusum*:

1. "*Abdomen* vittis circa septem transversis angustis nigris... et cum vittis (interstitiis) ejusmodi albis alternantibus supra pictum" ("abdomen marked on the top with about seven narrow black transverse stripes, alternating with corresponding white spaces")—these are of course the most obvious characteristic of the species.
2. "maculas paucas parvas albas, quarum quattuor in trapezium latissimum, antice latius quam postice" ("a few small white spots, four of which are arranged in a broad trapezoid, broader in front than in the back") on the black tip of the abdomen—clearly visible, for example, in Fig. 3.
3. "tibiae et metatarsi annulum latum nigro- vel ferrugineo-fuscum habent, qui tamen in pedibus 2.' and 3." parium plus minus obsoletus est" ("broad dark bands at the end of the tibiae and metatarsi, which however are more or less faint on the second and third pair of legs")—not in itself a conclusive detail, but nonetheless very carefully observed and in agreement with both photographed specimens.
4. "*Vulva* callum transversum crassum nigrum format" ("epigyne formed by a black, transverse thickening")—although this is not very detailed, it does fit the shape of the epigyne of *T. zebrinusum*, in contrast to many

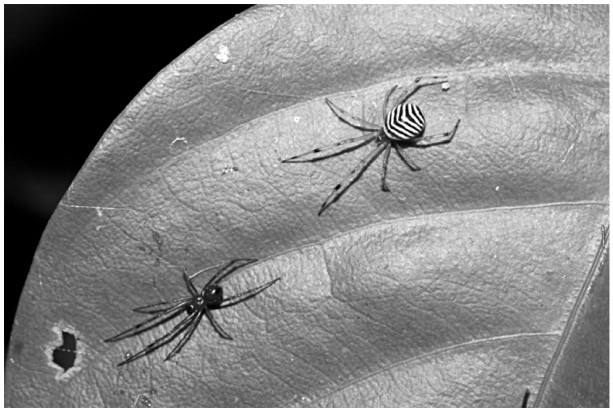

Fig. 1. Male and female *Theridion zonulatum* in Thailand. Photo: RE.

Fig. 2. Epigyne (above) and vulva (below) of a female *Theridion zonulatum* from Thailand. Photo: AG.

Fig. 3. Posterior view of a female *Theridion zonulatum* from Borneo. Photo: GA.

Fig. 4. Female holotype of *Theridion zonulatum*, habitus. Photo: Maria Tavano.

other *Theridion* species.

Taken together, these agreements are so comprehensive, that they alone could probably serve to establish the synonymy of the two species. Moreover, fortunately, the type material of Thorell is still maintained in very good shape in the collection of the Museo Civico di Storia Naturale "Giacomo Doria" in Genoa, Italy. Examination of the holotype (Figs. 4–7) confirms that this specimen belongs to the same species as the one described by Zhu. Thus *Theridion zonulatum* is a senior synonym of *Theridion zebrinusum* and therefore the valid name for this widespread and conspicuous species. The list of synonyms is shown below.

Theridion zonulatum Thorell 1890

Theridion zonulatum Thorell 1890, p. 273 (female holotype, examined).

Theridion zebrinusum Zhu 1998, p. 165, fig. 103A–C; Song, Zhu & Chen 1999, p. 148, fig. 83A–B (female holotype, not examined). **Syn. nov.**

Notes. The nomen nudum "*Linyphia striata*" (Sebastian

Fig. 5. Female holotype of *Theridion zonulatum*, ventral view of abdomen. Photo: Maria Tavano.

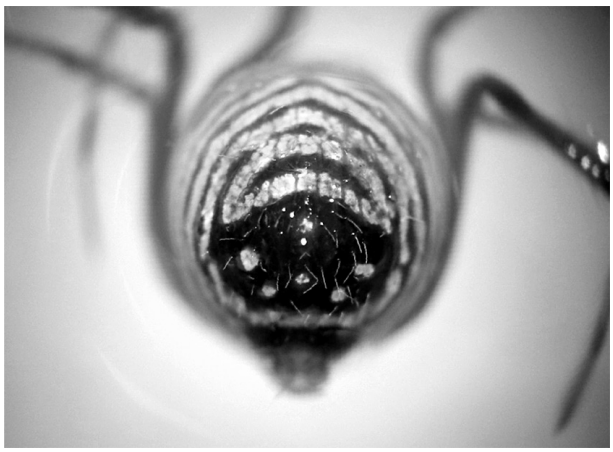

Fig. 6. Female holotype of *Theridion zonulatum*, posterior view of abdomen. Photo: Maria Tavano.

et al. 2009) from Kerala, India, also seems to refer to a closely related, if not conspecific, species and would probably have been another junior synonym of *T. zonulatum* had it been published with a correct designation of a holotype according to ICZN Article 16.4. This name has led to misidentifications based on the photo of "*Linyphia striata*" provided in the widely available book by Sebastian et al., and the close relationship with *T. zonulatum* might provide an indication concerning the status of putative "*Linyphia*" specimens reported from India.

Regarding *Theridion zebrinusum*, the name *T. zebrinum* used in Platnick (2014) is an unjustified emendation of an incorrect latinization, according to ICZN Article 32.5.1. The expected Latin translation of the Chinese vernacular 条斑球蛛 (striped cobweb spider) would be *T. zebrinum*, but it is also obvious that the author intentionally chose the unconventional (but otherwise correctly formed) spelling, as evidenced by the analogous formation of *T. gramineusum* and *T. odoratusum* in the same work and the fact that the name is not corrected later in Song et al. (1999).

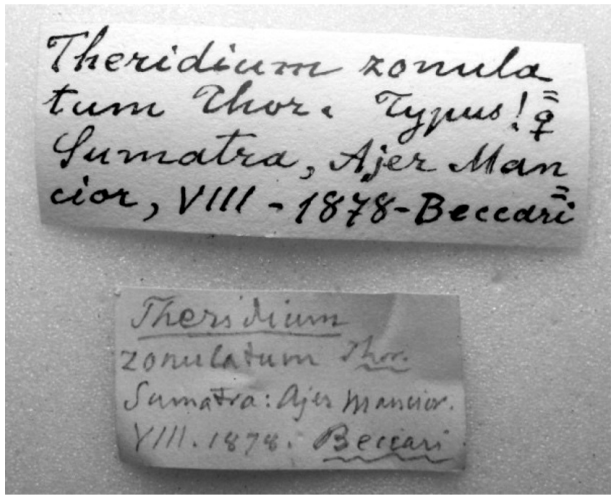

Fig. 7. Labels of the holotype of *Theridion zonulatum*. Photo: Maria Tavano.

Discussion

The original description of both species was based on a female specimen, and the male of the species has not been formally described yet; Fig. 1 shows that it has a very different habitus than its mate. As no actual male specimen was available for closer study, no attempt has been made to check if it perhaps also has been described earlier under another name.

Two features of Thorell's work probably conspired to lead to the oversight during the description of *T. zebrinusum.* On the one hand, Thorell's papers are consistently published without figures, making a rapid browsing for similar species difficult. On the other hand, all his descriptions of new species are in Latin, which was the universal language of scientific discourse during the 19th century, but is less and less popular amongst arachnologists today (Brignoli 1983).

On the other hand, there are good reasons not to ignore the large amount of early work by Thorell and others, which is nowadays readily accessible via the internet collections of the Biodiversity Heritage Library. Obviously, the majority of spider species known so far, especially in many underexplored areas, have been first described by the arachnologists of the Golden Age (Bonnet 1945)—as estimates of spider biodiversity are often based on the rate of species discoveries and re-discoveries, a correct interpretation of the early descriptions is essential. As the example of *Theridion zonulatum* shows, the descriptions by Thorell are so accurate and informative that they can serve to identify some species (or at least indicate possible relationships) even in the absence of illustrations. Thorell had spent a substantial part of his early arachnological efforts on disentangling the synonymy of European spider species (Thorell 1870–73), and the lessons he learnt there clearly helped him to focus his own descriptions on the most pertinent characters in a very systematic way. Also, Thorell's impressive

literacy (he published eloquent papers in many of the major European languages) ensures that his descriptions are in fact quite readable, in contrast to even earlier work, such as Clerck's Svenska spindlar (1757), where the Latin text only becomes comprehensible by close comparison to its parallel Swedish translation. Most importantly, once possible relatives have been identified for any species one intends to describe as new, the actual type material used by Thorell is still in existence and can be examined for comparison. A comprehensive consideration of taxonomic legacy literature will, in the long run, help to increase nomenclatorial stability and to obtain a clearer overview of the worldwide biodiversity of spiders.

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